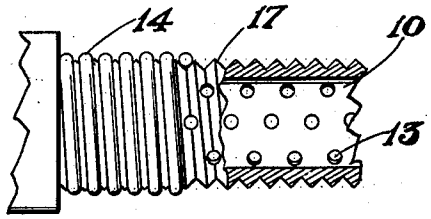
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AERATING DEVICE

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AERATING DEVICE

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This invention relates to devices for the aeration of liquids and dispersion of fluids and, more particularly, to such devices which can readily be utilized in processes of yeast manufacture.

A general object of the invention is to provide a device that will effectively produce an intimate contact between fluids and liquids to insure effective chemical reactions, such for example, as is required for hydrogenation in the liquid phase by means of hydrogen or for oxidation in the liquid phase by means of oxygen.

Another object of the invention is to provide a device that will efficiently disperse fluids in a finely divided spray so that a maximum amount of the substance to be treated may be completely and evenly acted upon to a like degree.

Another and more specific object is to provide a dispersion device whereby the quantity of fluid being dispersed can adequately and effectively be regulated by controlling the dimensions between the escape passages through which the fluid is finally diffused.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

The sole figure is a fragmentary longitudinal view, partly in section, of a simple embodiment of the invention.

Heretofore it was customary to use perforated pipes, porous plates, or masses of broken materials to subdivide the fluid into numerous jets or bubbles. In such devices, however, the escape passages are either objectionably large, so that the fluid is ejected in stream-like jets which are not evenly distributed over the proper area, or if small are liable to become clogged rapidly, while the clearing of the passages is a laborious and difficult if not impracticable operation.

Referring now more particularly to the drawing, the dispersion device as shown consists of a hollow body or conduit preferably a pipe 10 having suitably disposed perforations at 13. Around the pipe a bar shown in the form of a wire 14 is closely wound in a manner adapted to form a layer sufficient to envelope the numerous perforations and over which a second or third layer may conveniently be added, when desired.

As will be understood, a fluid forced into such pipe will pass out through the perforations and be divided into numerous thin sheets in making its way between the coils of the wire envelope. Obviously, in place of the rows of perforations, the pipe may be formed with longitudinal or spiral slits.

If desired, the spacing of the convolutions of the wire may be fixed by first cutting a screw thread 17 on the surface of the pipe and then winding the wire onto the thread so formed.

A pipe apertured and enveloped in wire, as above described, and immersed in the liquid to be aerated may be used as the sole means of aeration or a group of such pipes may be arranged upon a main feed pipe to extend as a grid or otherwise between two or more main pipes.

In all cases the material used in constructing the dispersion device is selected with due regard to the liquid in which it is immersed. It may be suitably coated to render it innocuous or may be so selected as to act also as a catalyst or may be coated with catalytic material in the case of reactions depending on catalytic action.

The wire envelope may be composed of material having a coefficient of expansion similar to or different from that of the material constituting the hollow body portion of the device.

In operation, a fluid forced through an appropriate opening and thence through the pipe 10 is allowed to escape under pressure through the escape passages formed by the apertures 13, and the narrow crevices formed by the closely and adjacently wound turns of wire surrounding the pipe. Obviously, because of the contiguous convolutions of wire which tend to retard it, and between which appear minute and infinite number of escape means, the escaping fluid is necessarily so controlled as to be evenly and competently disseminated in a fan-like spray over a maximum area resulting in an intimate contact between dispersing fluid and liquid not heretofore attainable. With such type of construction, clogging of small or large perforations is largely eliminated because of the difficulty of liquid substances penetrating the minute crevices formed by the closely wound adjacent turns of wire as readily as clogging would occur where relatively small perforations may be used without any enveloping or protective covering.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing

from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A device for the aeration of liquids and dispersion of fluids comprising particles in suspension comprising a hollow body screw-threaded on its outer surface, and provided with escape passages formed by suitably disposed perforations, and an encircling layer wound within the base of the thread so formed, and surrounding said hollow body having spacings therebetween, the spacings being of a width sufficient to permit an atomized stream of the aerating medium to issue but insufficient to permit the entry of suspended particles to said perforations.

2. A device for the aeration of liquids and dispersion of fluids comprising a hollow body, screw-threaded on its outer surface and provided with escape passages formed by suitably disposed perforations, and a layer of wire wound within the base of the thread so formed enveloping the hollow body, said wire being sufficiently large in diameter so that each convolution lies contiguous to the preceding convolution whereby the dimensions between the escape passages are competently controlled.

JAMES LOCKEY.